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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte DAVID A. HAYNER and
MAUREEN A. STENGLER

Appeal 2009-012818
Application 10/600,637
Technology Center 2600

Before BRADLEY W. BAUMEISTER, BRUCE R. WINSOR, and JENNIFER S. BISK, *Administrative Patent Judges*.

BAUMEISTER, *Administrative Patent Judge*.

DECISION ON APPEAL

SUMMARY

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 21-37. These claims stand rejected under 35 U.S.C. § 102(b) as anticipated by Watanabe (US 6,298,019 B1; Oct. 2, 2001).

We reverse.

Pursuant to our authority under 37 C.F.R. § 41.50(b), we enter a new ground of rejection. We reject claim 26 under 35 U.S.C. § 101 as being directed to non-statutory subject matter. We reject claim 36 under 35 U.S.C. § 112, ¶ 2, as being indefinite.

THE REJECTION UNDER 35 U.S.C. § 102(b)

CLAIMS 21 AND 22

Independent claim 21 is illustrative of the cited claims:

21. A device comprising:

a first actuator control law portion comprising an input to receive a representation of a first actuator position, and an output;

a second actuator control law portion comprising an input to receive a representation of a second actuator position, and an output;

a first actuator decoupler portion comprising a first input coupled to the output of the first actuator control law portion and a second input coupled to the output of the second actuator control law portion, and an output to provide a signal with decoupling compensation for a first actuator based on the representation of the second actuator position.

Contentions

The Examiner rejects claim 21 as being anticipated by Watanabe. The Examiner maps Watanabe's tracking actuator 130 to the claimed "first actuator" and the reference's focus actuator to the "second actuator" (Ans. 5-6). Furthermore, the Examiner finds Watanabe teaches the claimed "output to provide a signal with decoupling compensation for a first actuator," stating that the tracking control "is compensated by a gain change means 122" (Ans. 6 (citing col. 39, ll. 27-34)). Accordingly, to address the requirement that the claimed "compensation" is "based on the representation of the second actuator position," the Examiner finds "tracking gain change 122 is affected by the focus gain change 121" (Ans. 11).

Appellants argue, *inter alia*, Watanabe fails to disclose the "signal with decoupling compensation" (App. Br. 9). Appellants characterize the cited teachings of Watanabe as "a technique for learning the tracking gain of the tracking servo by creating a disturbance and then calculating a correction value with which the tracking gain can be corrected" (App. Br. 8 (citing col. 38, l. 24 to col. 39, l. 34)). Appellants contend "Watanabe teaches that this learning technique can be initiated by a focus jumping, but Watanabe fails to disclose that this learned tracking gain of the tracking control has any effect on the focus control or vice versa" (*id.* (emphasis omitted)). Accordingly, Appellants contend Watanabe fails to disclose "that any control signal includes decoupling compensation in any manner" (*id.* (emphasis omitted)).

Principles of Law

"[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the

patent application." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). It is the use of the words in the context of the written description and customarily by those skilled in the relevant art that accurately reflects both the "ordinary" and the "customary" meaning of the terms in the claims. *Ferguson Beauregard/Logic Controls, Div. of Dover Res., Inc. v. Mega Sys., LLC*, 350 F.3d 1327, 1338 (Fed. Cir. 2003).

> [The claims] are part of a fully integrated written instrument, consisting principally of a specification that concludes with the claims. For that reason, claims must be read in view of the specification . . . . [T]he specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.

Phillips, 415 F.3d at 1315 (citations omitted) (internal quotation marks omitted).

WATANABE

Watanabe discloses an apparatus for reading and writing optical media, where tracking control gain learning is used for disks with multiple-layers (col. 38, ll. 24-27). Watanabe's tracking error (TE) signal controls the light beam on the disk to correctly scan the tracks, and the gain change circuit 122 adjusts this TE signal to "a prescribed amplitude (gain)" (col. 17, ll. 61-62). In Watanabe's apparatus, the tracking servo system is turned on when the focus of the light beam emitted from the laser is lead into one of the multiple layers, "information faces," of the disk (col. 38, ll. 35-40). In the embodiment cited by the Examiner, "the tracking gain is learned and the tracking gain is changed to an optimum value for the information face" when focus jumping from one face to another (col. 39, ll. 18-20).

Analysis

Appellants have persuaded us of error in the Examiner's rejection of claims 21 and 22. We find that the Examiner has failed to establish Watanabe discloses "a signal with decoupling compensation" as claimed.

In light of the Specification and the ordinary and customary meaning, the claim term "compensation" requires that the "decoupler" output a signal that provides a correction for the effect of cross-coupling. For example, the Specification discusses decoupling "compensation" in the context of removing and subtracting the cross-coupling effect (Spec. ¶¶ 0019-23).

The Examiner states that Watanabe's tracking control is "compensated by a gain change means 122," but Watanabe fails to show a correction for a cross-coupling effect (Ans. 6). Likewise, the Examiner's finding that "tracking gain change 122 is affected by the focus gain change 121" during a focus jump (Ans. 11) does not establish whether a compensation for a cross-coupling effect is present. At most, the teachings noted by the Examiner show a signal *based on* the focus actuator position.

Regarding the "decoupling," the Examiner finds "both [tracking control] and [focus control] are connected to DSP 129" (Ans. 6) and later explains the focus jump "will switch off (de-couple) the tracking operation" (Ans. 13). However, a signal that switches off tracking *prevents* the cross coupling effect as opposed to *correcting* for the cross coupling effect, as required by the term "compensation." As such, the Examiner has not shown the result of the focus jump is a "decoupling compensation."

Because Appellants have persuaded us that the Examiner erred in interpreting Watanabe's teachings, we will not sustain the Examiner's rejection of independent claim 21 or of dependent claim 22.

CLAIMS 23-25

Independent claim 23 is illustrative of the cited claims:

23. An optical disk drive comprising:

a focus control loop;

a tracking control loop, wherein the focus control loop and the tracking control loop are cross-coupled, wherein a focus control command excites the tracking control loop and a tracking control command excites the focus control loop; and

a decoupler configured to produce a modified focus control command from the focus control command and the tracking control command, and configured to produce a modified tracking control command based on the tracking control command and the focus control command, wherein the modified focus control command has a different excitation of the tracking control loop than the focus control command and wherein the modified tracking control command has a different excitation of the focus control loop than the tracking control command.

Contentions

The Examiner rejects claim 23 as being anticipated by Watanabe. In particular, the Examiner finds Watanabe's tracking control command "excites" the focus control and vice versa because the prior art teaches a servo loop where "any change of gain value inside the loop will excite a sequence of servo operations on both the tracking gain and the focusing gain" (Ans. 12). The Examiner interprets the term "excites" as encompassing the step of switching off the tracking operation in response to a focus jump as well as the situation when "the tracking operation will excite the preventative operation of an objective lens being moved in a focusing direction" (*id.*).

In response, Appellants argue, *inter alia*,

> Watanabe fails to disclose that a tracking control command on the tracking component of Watanabe excites the focus component of Watanabe, or vice versa, in any manner. Although the Office attempts to demonstrate cross-coupling and mutual excitation by way of the DSP 129 of Watanabe, Watanabe merely discloses that events in one of the tracking component or focus component can serve to initiate an operation in the other, but one of ordinary skill in the art will readily appreciate that a triggering event does not serve to excite a control loop as provided by claim 23.

(App. Br. 10).

Analysis

Appellants have persuaded us of error in the Examiner's rejection of claim 23. We find that the Examiner has failed to establish Watanabe discloses the limitation "a focus control command excites the tracking control loop." We disagree with the Examiner that the claimed requirement that "focus control command excites the tracking control loop" encompasses Watanabe's operation of turning off the tracking control when focus jumping or other triggering events in Watanabe.

Appellants' Specification provides sufficient guidance and context for interpreting the term "excites." For example, the Specification discusses excitation of the control loops in the context of achieving "tracking only *action* (force or torque)" (Spec. ¶ 0025 (emphasis added)). To this end, the Specification states the actuator decoupler 406 operates to produce a tracking control signal that provides "substantially only excitation of the tracking loop" (Spec. ¶ 0026). Consistent with the plain and ordinary meaning in the art, the Specification's discussion of "action," "force," and "torque" suggests that the term "excite" requires a focus command

contribute to inducing some activity in the tracking control. In contrast, the Examiner's rejection is predicated on the interpretation that the term "excites" encompasses inducing inactivity: "switching off the tracking operation" (Ans. 12). Therefore, the Examiner has failed to show that Watanabe discloses the "focus control command excites the tracking control loop."

Appellants have persuaded us that the Examiner's reliance on Watanabe in the rejection of claim 23 is an error. Accordingly, we will not sustain the Examiner's rejection of independent claim 23 or of claims 24 and 25, which depend from claim 23.

CLAIMS 26-30, 36, AND 37

Independent claim 26 is illustrative of the cited claims:

26. A method comprising:

determining cross-coupling characteristics of a focus actuator and a tracking actuator of an optical pickup unit; and

determining a decoupling matrix to decouple the focus actuator and the tracking actuator.

Contentions

The Examiner rejects claim 26 as being anticipated by Watanabe. Regarding the "determining a decoupling matrix" step, the Examiner finds Watanabe's "DSP 129 and gain change means forms a servo loop having servo parameters which can be considered as a de-coupling matrix of tracking and focusing" (Ans. 8-9). Furthermore, the Examiner states,

> the prior art of Watanabe's gain change means 121, 122 and 127 forms a servo loop control means which has cross-coupling control paths linked to each gain change means like a matrix in order to carry out control signals so that the servo loop control means function under assigned characteristics.

(Ans. 13).

Appellants argue, *inter alia*,

> Further, even if it is assumed, *arguendo*, that the alleged "servo loop" of the DSP 129 and the gain change circuits 121, 122, and 127 constitutes a "decoupling matrix," the Office fails to establish how Watanabe ***determines*** the "decoupling matrix"/"servo loop", much less how Watanabe determines the "decoupling matrix"/"servo loop" based on the "servo loop" (which the Office also interprets as the "cross-coupling characteristics" from which the "decoupling matrix" is determined as provided by claims 26 and 36).

(App. Br. 13).

Analysis

Appellants have persuaded us of error in the Examiner's rejection of claims 26 and 36. The Examiner has failed to establish Watanabe discloses the claimed "determining a decoupling matrix." Appellants' claim 26 recites the active, positive step of "determining a decoupling matrix." Likewise, claim 36 requires a "means for" doing so.

The Examiner's rejection appears to map the claimed "matrix" to a structure in Watanabe's system, but fails to address the step and function of "determining" as noted by Appellants (App. Br. 13). Under the mapping proposed in the rejection, the Examiner has not shown that Watanabe's system performs any *act* of "determining" that produces a "matrix" required by the claim. Instead, the Examiner has equated the "matrix" to Watanabe's circuits, implying that the optical disk drive itself, in the rejection of claim 36, contains a "means for determining" these circuits, which is clearly not consistent with the teachings of the prior art.

Because Appellants have persuaded us that the Examiner's reliance on Watanabe in the rejection of claims 26 and 36 is an error, we will not sustain

the Examiner's rejection of independent claims 26 or 36, or of claims 27-30 and 37, which depend from claims 26 and 36, respectively.

CLAIMS 31-35

Independent claim 31 is illustrative of the cited claims:

31. An optical disk drive comprising:

a lens assembly;

a focus actuator that is configured to move the lens assembly in a focus direction;

a tracking actuator that is configured to move the lens assembly in a tracking direction; and

a decoupler configured to decouple the focus actuator from the tracking actuator by reducing signal cross coupling.

Contentions

The Examiner's rejection states "[c]laims 31-35 have limitations similar to those treated in the above rejection [of claim 26], and are met by the reference as discussed above" (Ans. 9).

In response, Appellants contend Watanabe fails to disclose the claimed "decoupler" because "Watanabe fails to address signal cross coupling, or the reduction thereof, in any manner" (App. Br. 14-15).

Analysis

Appellants have persuaded us of error in the Examiner's rejection of claims 31-35. Unlike claim 26, claim 31 expressly requires the claimed "decoupler" perform its function "by reducing signal cross coupling." The Examiner's rejection of claim 26 fails to discuss "signal cross coupling." Moreover, the portions of Watanabe cited in the rejection of claim 26 also fail to expressly mention "signal cross-coupling" (Ans. 8-9 (citing Watanabe, Fig. 1)), and it is not reasonably clear how these portions are mapped to the claim limitations of claim 31. Thus, the Examiner's reliance

on the reasoning presented in the rejection of claim 26 fails to address the limitations newly introduced in claim 31. For these reasons, we find Examiner has not reasonably articulated an ascertainable basis for the finding that Watanabe anticipates the claimed "reducing signal cross coupling."

Accordingly, we will not sustain the Examiner's rejection of claim 31. We will, likewise, not sustain the Examiner's rejection of claims 32-25, which depend from claim 31.

NEW REJECTION OF CLAIM 26 UNDER 35 U.S.C. § 101

Principles of Law

Statutory provision 35 U.S.C. § 101 reads as follows: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." However, the scope of subject matter encompassed by § 101 does have limits. Exceptions falling outside of the scope of § 101's coverage include the laws of nature, physical phenomena, and abstract ideas. *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980). A method that can be performed "by human thought alone is merely an abstract idea and is not patent-eligible under § 101." *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1373 (Fed. Cir. 2011). As stated in *CyberSource*:

> Methods which can be performed entirely in the human mind are unpatentable not because there is anything wrong with claiming mental method steps as part of a process containing non-mental steps, but rather because computational methods which can be performed entirely in the human mind are the types of methods that embody the "basic tools of scientific and

> technological work" that are free to all men and reserved exclusively to none.

Id. (citing *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972) (emphasis omitted)).

Analysis

The method of claim 26 is an unpatentable abstract idea because the method can be performed by human thought alone. The presence of device components, such as the optical pickup unit, in the claim does not change the character of the claimed steps because such components are the objects on which the steps operate. The language of claim 26 fails to expressly or implicitly limit either "determining" step to necessarily be accomplished by a machine. Moreover, even if some physical steps are required to obtain the information operated on, such steps cannot alone confer patentability. *Id.* at 1372 (citing *In re Grams*, 888 F.2d 835, 839-40 (Fed. Cir. 1989)).

Turning to the claim language, the "determining cross-coupling characteristics" step encompasses mental determinations based on data collected. The Specification discloses taking measurements to determine the effects of cross-coupling using a test article (Spec. ¶ 0028), but as broadly recited in the claim, the step of "determining" encompasses mental determinations based on these measurements. That is, the step is not limited to the measuring device itself making the determination, but instead, the step, as claimed, encompasses computations performed by the human mind to determine characteristics based on these measurements using the physical principles governing the operation of the device.

Likewise, the "determining decoupling matrix" step can be performed in the human mind, or by a human using a pen and paper. The determination of a matrix is merely the manipulation of data that encompasses steps

performed in the mind of a person designing an optical disk drive. To the extent recordation may be necessary, doing so using a pen and paper would suffice in view of Appellants' disclosed matrix operations (Spec. ¶ 0030-40). Specifically, the complexity of the claimed step does not require the use of a computer to perform the calculations or to maintain the matrix. Taken as a whole, the claimed method is broad enough to encompass a computational method that an engineer could mentally perform when designing the optical drive.

Accordingly, we reject claim 26 as not directed to patent-eligible subject matter under 35 U.S.C. § 101 because the claimed method constitutes an unpatentable mental process.

Although we decline to reject every claim under our discretionary authority under 37 C.F.R. 41.50(b), we emphasize that our decision does not mean the remaining claims are patentable. Rather, we merely leave the patentability determination of these claims to the Examiner. *See* MPEP § 1213.02.

NEW REJECTION OF CLAIM 36 UNDER 35 U.S.C. § 112, ¶ 2

Independent claim 36 reads as follows:

36. An optical disk drive comprising:

means for determining cross-coupling characteristics of a focus actuator and a tracking actuator; and

means for determining a decoupling matrix to decouple the focus actuator and the tracking actuator.

Principles of Law

Once a court concludes that a claim limitation is a means-plus-function limitation, two steps of claim construction remain: 1) the court must

first identify the function of the limitation; and 2) the court must then look to the Specification and identify the corresponding structure for that function. *Med. Instrumentation & Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1210 (Fed. Cir. 2003).

As set forth in *Default Credit*:

> "[I]f one employs means-plus-function language in a claim, one must set forth in the specification an adequate disclosure showing what is meant by that language. If an applicant fails to set forth an adequate disclosure, the applicant has in effect failed to particularly point out and distinctly claim the invention as required by the second paragraph of section 112." *In re Donaldson Co.*, 16 F.3d 1189, 1195 (Fed.Cir.1994) (en banc). "The specification must be read as a whole to determine the structure capable of performing the claimed function." *Budde v. Harley-Davidson, Inc.*, 250 F.3d 1369, 1379 (Fed.Cir.2001). A structure disclosed in the specification qualifies as "corresponding" structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim. *B. Braun Med. v. Abbott Labs.*, 124 F.3d 1419, 1424 (Fed.Cir.1997). This duty to link or associate structure to function is the *quid pro quo* for the convenience of employing § 112, ¶ 6. *See O.I. Corp. v. Tekmar Co.*, 115 F.3d 1576, 1583 (Fed.Cir.1997). "Fulfillment of the § 112, ¶ 6 trade-off cannot be satisfied when there is a total omission of structure." *Atmel*, 198 F.3d at 1382. While corresponding structure need not include all things necessary to enable the claimed invention to work, it must include all structure that actually performs the recited function. *See Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1119 (Fed.Cir.2002).

Default Proof Credit Card Sys., Inc. v. Home Depot U.S.A., Inc., 412 F.3d 1291, 1298 (Fed. Cir. 2005) (brackets in original).

The "clear linkage or association" in the Specification of the structure to the function recited in the claim is determined based on the understanding

of an artisan of ordinary skill. *See AllVoice Computing PLC v. Nuance Commc'ns, Inc.*, 504 F.3d 1236, 1242 (Fed. Cir. 2007).

"If there is no structure in the specification corresponding to the means-plus-function limitation in the claims, the claim will be found invalid as indefinite." *Biomedino, LLC v. Waters Techs. Corp.*, 490 F.3d 946, 950 (Fed. Cir. 2007).

Analysis

We reject claim 36 under 35 U.S.C. § 112, ¶ 2, as being indefinite because the Specification does not disclose the necessary structure corresponding to the means-plus-function limitation "means for determining cross-coupling characteristics of a focus actuator and a tracking actuator." In particular, the Specification discloses embodiments where determination of the characteristics is performed during manufacture of the drive, but fails to provide sufficient disclosure of the corresponding structure that functions as a component in the optical disk drive as required by the claim.

Because the claim limitation invokes § 112, ¶ 6, we must, therefore, determine if the Specification discloses the corresponding structure in accordance with the statute. The Specification contains the following disclosure regarding determining cross-coupling characteristics:

> Cross-coupling characteristics, i.e., cross-coupling matrices, of the system are determined, step 504. For example, a measurement quantifying the effects of tracking commands on the focus position can be made by providing a tracking command to a tracking actuator and a known circuit (for example, a known simple regulator) to the focus actuator and measuring results on the focus position. These and other cross-coupling effects can be measured and stored. These measurement and storage operations can be performed with test

> articles, during manufacture of the drive or during operation of the drive.

(Spec. ¶ 0028).

The Specification fails to disclose a corresponding structure "for determining cross-coupling characteristics" that is part of the optical disk drive, as required by claim 36. The embodiments where the characteristics are determined during the manufacture of the drive are not relevant to our inquiry because the claim requires that the means be an element within the "optical disk drive."

Moreover, the Specification's additional statement that the "measurement and storage operations can be performed with test articles, . . . during operation of the drive" is not a sufficient disclosure of structure. The fact that one of ordinary skill in the art could imagine various types of devices capable of determining the cross-coupling effects within an optical disk drive, during its operation, is not sufficient under 35 U.S.C. § 112, ¶ 6, to put one on notice of what structures the Specification, itself, discloses. *See Biomedino*, 490 F.3d at 953 ("The inquiry is whether one of skill in the art would understand the specification itself to disclose a structure, not simply whether that person would be capable of implementing a structure." (citing *Med. Instrumentation*, 344 F.3d at 1212)).

In the cited portion of the Specification, the phrase "test articles" does not clearly define a specific structure in the optical drive itself. In particular, the Specification does not describe what these "test articles" are or whether such articles are included within the drive itself. Moreover, the discussion of "cross-coupling matrices" in paragraph 0028 of the Specification suggests that subsequent calculations are performed on the measurements to determine the "characteristics." It is not reasonably clear whether the "test

articles" or some other device performs these subsequent calculations. Therefore, the corresponding structure is not disclosed in the Specification itself in a way that one skilled in the art would understand what structure performs the function recited in claim 36.

Accordingly, we reject claim 36 as indefinite under 35 U.S.C. § 112, ¶ 2.

Although we decline to reject every claim under our discretionary authority under 37 C.F.R. 41.50(b), we emphasize that our decision does not mean the remaining claims are patentable. Rather, we merely leave the patentability determination of these claims to the Examiner. *See* MPEP § 1213.02.

DECISION

The Examiner's decision rejecting claims 21-37 is reversed.

Pursuant to our authority under 37 C.F.R. § 41.50(b), we enter the following new grounds of rejection:

We reject claim 26 under 35 U.S.C. § 101 as being directed to non-statutory subject matter.

We reject claim 36 under 35 U.S.C. § 112, ¶ 2, as being indefinite.

Rule 37 C.F.R. § 41.50(b) states that "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review." Furthermore, 37 C.F.R. § 41.50(b) also provides that Appellants, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new grounds of rejection to avoid termination of the appeal as to the rejected claims:

> (1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .
>
> (2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

REVERSED
37 C.F.R. § 41.50(b)

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